APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/634,850	08/06/2003	Chih-Cheng Hsieh	TOP 304/SMR	7002

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EXAMINER
GILES, NICHOLAS G

ART UNIT	PAPER NUMBER
2622	

DATE MAILED: 11/15/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
Office Action Summary	10/634,850	HSIEH, CHIH-CHENG
	Examiner	Art Unit
	Nicholas G. Giles	2622

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.
2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.
3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18* is/are pending in the application.
   4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5)☐ Claim(s) _____ is/are allowed.
6)☒ Claim(s) *1-18* is/are rejected.
7)☐ Claim(s) _____ is/are objected to.
8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.
10)☒ The drawing(s) filed on <u>*06 August 2003*</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.
   Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
   Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a)☒ All   b)☐ Some *   c)☐ None of:
      1.☒ Certified copies of the priority documents have been received.
      2.☐ Certified copies of the priority documents have been received in Application No. _____.
      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
   * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)
2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3)☐ Information Disclosure Statement(s) (PTO/SB/08)
   Paper No(s)/Mail Date _____.
4)☐ Interview Summary (PTO-413)
   Paper No(s)/Mail Date. _____.
5)☐ Notice of Informal Patent Application.
6)☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2.   Claims **1, 4, 6-7, 14, and 17-18** are rejected under 35 U.S.C. 102(e) as being

anticipated by Toyoda et al. (U.S. Pub. No. 2003/0063202).

Regarding claim 1, Toyoda et al. discloses:

A method for defect compensation in a color image sensor having

pixels, the method comprising the steps of: predetermining a first and

second threshold (¶0049-0054), and defining a window (¶0046);

identifying peak and normal pixels, wherein the peak is one of the pixels

that has a color difference larger than the first threshold from two adjacent

pixels of the same color, and the normal pixels are those other than the

peak (¶0045-0049); identifying the peak as a defect if each of the two

pixels immediately adjacent to the peak has a color difference smaller

than the second threshold from two adjacent pixels of the same color

(¶0050-0057), and all the other pixels in the window positioned according

to the location of the peak are normal pixels (¶0058); and correcting a

color value of the defect (¶0061-69).

Regarding claim **4**, see the rejection of claim 1 and note that Toyoda et al. further

discloses:

Pixels are red, yellow and cyan (Figs. 2-4, note magenta is a shade

of red).

Regarding claim **6**, see the rejection of claim 1 and note that Toyoda et al. further

discloses:

Color value of the defect is corrected as a mean of the color values

of two adjacent pixels of the same color (¶0064-0066).

Regarding claim **7**, see the rejection of claim 1 and note that Toyoda et al. further

discloses:

First and second threshold, and the window are programmable

(¶0013-0014, note when the thresholds are programmed they affect the

functions done within the window).

Regarding claim **14**, Toyoda et al. discloses:

A method for defect compensation in an image sensor having

pixels, the method comprising the steps of: predetermining a first and

second threshold (¶0049-0054), and defining a window (¶0046);

identifying peak and normal pixels, wherein the peak is one of the pixels

that has differences larger than the first threshold from two adjacent

pixels, and the normal pixels are those other than the peak (¶0045-0049);

identifying the peak as a defect if each of the two pixels adjacent to the

peak has differences smaller than the second threshold from two adjacent

pixels (¶0050-0057), and all the other pixels in the window positioned

according to the location of the peak are normal pixels (¶0058); and

correcting a value of the defect (¶0061-69).

Regarding claim **17**, see the rejection of claim 14 and note that Toyoda et al.

further discloses:

Value of the defect is corrected as a mean of the values of two

adjacent pixels (¶0064-0066).

Regarding claim **18**, see the rejection of claim 14 and note that Toyoda et al.

further discloses:

First and second threshold, and the window are programmable

(¶0013-0014, note when the thresholds are programmed they affect the

functions done within the window).

Claim Rejections - 35 USC § 103

3.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4.   Claims **2-3, 5, 8-13, and 15-16** are rejected under 35 U.S.C. 103(a) as being

unpatentable over Toyoda et al.

Regarding claim **2**, see the rejection of claim 1 and note that Toyoda et al. is silent with regards to storing a plurality of data bits that define peak and normal pixels. Toyoda however does remember the location of peak pixels in order to be able to determine that the peak pixels are defective. Assigning a data bit map of the locations that Toyoda remembers as peak pixels would be advantageous because processing of the peak pixels to determine defective pixels could be delayed thus allowing the user to rapidly acquire images in succession instead of having to fully process each image immediately thus slowing down that acquisition of images. A pixel defect map could be used in this case to store the peak pixels and normal pixels and Official Notice is taken that pixel defect maps were well known at the time the invention was made. For this reason it would have been obvious to one of ordinary skill in the art at the time the invention was made to have Toyoda's method include using a defect data bit pixel map to record peak and normal pixels.

Regarding claim **3**, see the rejection of claim 1 and note that Toyoda et al. is silent with regard to the pixels being red, blue, and green. Official Notice is taken that it was well known to use red, blue, and green pixels in an image sensor. An advantage to using red, blue, and green pixels is that they are the primary colors and can be used in image processing to provide realistic looking mixes of colors in an image. For this reason it would have been obvious to one of ordinary skill in the art at the time the invention was made to have Toyoda's method include using red, blue, and green pixels.

Regarding claim **5**, see the rejection of claim 1 and note that Toyoda et al. is silent with regards to the image sensor being a CMOS sensor. Official Notice is taken

that it was well known at the time the invention was made to use CMOS image sensors

and doing defect detection and correction on them. An advantage to using CMOS

image sensors is that they use low amounts of power, which allow for longer battery like

in digital cameras. For this reason it would have been obvious to one of ordinary skill in

the art at the time the invention was made to have Toyoda's method include using a

CMOS image sensor.

     Regarding claim **8**, Toyoda et al. discloses:

> An apparatus for defect compensation in a color image sensor
>
> having pixels, the apparatus comprising: and a processor implementing
>
> the steps of: predetermining a first and second threshold (¶0049-0054),
>
> and defining a window (¶0046); identifying peak and normal pixels,
>
> wherein the peak is one of the pixels that has a color difference larger
>
> than the first threshold from two adjacent pixels of the same color, and the
>
> normal pixels are those other than the peak (¶0045-0049); identifying the
>
> peak as a defect if each of the two pixels immediately adjacent to the peak
>
> has a color difference smaller than the second threshold from two
>
> adjacent pixels of the same color (¶0050-0057), and all the other pixels in
>
> the window positioned according to the location of the peak are normal
>
> pixels (¶0058); and correcting a color value of the defect (¶0061-69).

Toyoda et al. is silent with regards to storing a plurality of data bits that define

peak and normal pixels. Toyoda however does remember the location of peak pixels in

order to be able to determine that the peak pixels are defective. Assigning a data bit

map of the locations that Toyoda remembers as peak pixels would be advantageous

because processing of the peak pixels to determine defective pixels could be delayed

thus allowing the user to rapidly acquire images in succession instead of having to fully

process each image immediately thus slowing down that acquisition of images. A pixel

defect map could be used in this case to store the peak pixels and normal pixels and

Official Notice is taken that pixel defect maps were well known at the time the invention

was made. For this reason it would have been obvious to one of ordinary skill in the art

at the time the invention was made to have Toyoda's apparatus include using a defect

data bit pixel map to record peak and normal pixels. Further note that this type of setup

requires a memory for storage.

Regarding claim **9**, see the rejection of claim 8 and note that Toyoda et al. is

silent with regard to the pixels being red, blue, and green. Official Notice is taken that it

was well known to use red, blue, and green pixels in an image sensor. An advantage to

using red, blue, and green pixels is that they are the primary colors and can be used in

image processing to provide realistic looking mixes of colors in an image. For this

reason it would have been obvious to one of ordinary skill in the art at the time the

invention was made to have Toyoda's apparatus include using red, blue, and green

pixels.

Regarding claim **10**, see the rejection of claim 9 and note that Toyoda et al.

further discloses:

        Pixels are red, yellow and cyan (Figs. 2-4, note magenta is a shade of

red).

Regarding claim **11**, see the rejection of claim 9 and note that Toyoda et al. is silent with regards to the image sensor being a CMOS sensor. Official Notice is taken that it was well known at the time the invention was made to use CMOS image sensors and doing defect detection and correction on them. An advantage to using CMOS image sensors is that they use low amounts of power, which allow for longer battery like in digital cameras. For this reason it would have been obvious to one of ordinary skill in the art at the time the invention was made to have Toyoda's apparatus include using a CMOS image sensor.

Regarding claim **12**, see the rejection of claim 9 and note that Toyoda et al. further discloses:

> Color value of the defect is corrected as a mean of the color values of two adjacent pixels of the same color (¶0064-0066).

Regarding claim **13**, see the rejection of claim 9 and note that Toyoda et al. further discloses:

> First and second threshold, and the window are programmable (¶0013-0014, note when the thresholds are programmed they affect the functions done within the window).

Regarding claim **15**, see the rejection of claim 14 and note that Toyoda et al. is silent with regards to storing a plurality of data bits that define peak and normal pixels. Toyoda however does remember the location of peak pixels in order to be able to determine that the peak pixels are defective. Assigning a data bit map of the locations that Toyoda remembers as peak pixels would be advantageous because processing of

the peak pixels to determine defective pixels could be delayed thus allowing the user to

rapidly acquire images in succession instead of having to fully process each image

immediately thus slowing down that acquisition of images. A pixel defect map could be

used in this case to store the peak pixels and normal pixels and Official Notice is taken

that pixel defect maps were well known at the time the invention was made. For this

reason it would have been obvious to one of ordinary skill in the art at the time the

invention was made to have Toyoda's method include using a defect data bit pixel map

to record peak and normal pixels.

Regarding claim **16**, see the rejection of claim 14 and note that Toyoda et al. is

silent with regards to the image sensor being a CMOS sensor. Official Notice is taken

that it was well known at the time the invention was made to use CMOS image sensors

and doing defect detection and correction on them. An advantage to using CMOS

image sensors is that they use low amounts of power, which allow for longer battery like

in digital cameras. For this reason it would have been obvious to one of ordinary skill in

the art at the time the invention was made to have Toyoda's method include using a

CMOS image sensor.

5.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Nicholas G. Giles whose telephone number is (571)

272-2824. The examiner can normally be reached on Monday through Friday from

7:30am to 4:00pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ngoc - Yen Vu can be reached on (571) 272-7320. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

NGG

NGOC-YEN VU
SUPERVISORY PATENT EXAMINER